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EXAMINER	
BRAY, STEPHEN A	

ART UNIT	PAPER NUMBER
2629	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/582,644	ISHAKOV, MARK	
	Examiner	Art Unit	
	STEPHEN A. BRAY	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 June 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 21-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 21-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 June 2006* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *8/03/2007; 6/26/2009*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "101" has been used to designate both the control circuit and the 11-digit shift register in Figure 4. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 29, 34, 36, and 39-40 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. There is nothing in the

disclosure as originally filed that discloses the limitation "free-form programming" or what it means. The Examiner will examine the claims under the assumption that the limitation "free-form programming" to mean that the user can select which visual indication they want to assign to a key.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 26-27 and 37-38 are rejected under 35 U.S.C. 102(b) as being anticipated by Acevedo (US 5,818,361).

Regarding claim 1, *Acevedo* discloses a multifunctional keyboard comprising a plurality of multifunctional keys having selectable key functions, at least some of the keys each including (Figure 1 and Column 4, lines 1-24 of *Acevedo* discloses having a plurality of display keys 12 which have selectable key functions.):

a touch surface (It is inherent that the display keys 12 taught by *Acevedo* would have a touch surface for the user to press to actuate the keys.);

an LED matrix adjacent to said touch surface and being operative to display selectable visual indications corresponding to said selectable key functions (Figure 1 and Column 4, lines 1-24 of *Acevedo* discloses having a plurality of display keys 12 which have selectable key functions, of which each display key contains an LED display

which displays characters or other symbols which correspond to a desired function of each of the keys.).

Regarding claim 26, *Acevedo* discloses a multifunctional keyboard according to claim 1 coupled with at least one of gaming device, a computer and an internet communicator (Column 4, lines 25-32 of *Acevedo* disclose that the keyboard is connected to a computer.).

Regarding claim 27, *Acevedo* discloses a multifunctional keyboard according to claim 1 and wherein said selectable key functions are multi-lingual key functions (Column 4, lines 11-14 of *Acevedo* disclose that the display keys 12 are capable of displaying a foreign alphabet.).

Regarding claim 37, *Acevedo* discloses a method of operating a multifunctional keyboard comprising:

providing a plurality of multifunctional keys having selectable key functions, at least some of the keys each including (Figure 1 and Column 4, lines 1-24 of *Acevedo* discloses having a plurality of display keys 12 which have selectable key functions.):

a touch surface (It is inherent that the display keys 12 taught by *Acevedo* would have a touch surface for the user to press to actuate the keys.); and

an LED matrix adjacent to said touch surface and being operative to display selectable visual indications corresponding to said selectable key functions (Figure 1 and Column 4, lines 1-24 of *Acevedo* discloses having a plurality of display keys 12 which have selectable key functions, of which each display key contains an LED display

which displays characters or other symbols which correspond to a desired function of each of the keys.);

programming said selectable key functions (Column 4, lines 25-54 of *Acevedo* disclose that the computer connected to the keyboard can configure the keyboard based on the current application in use on the computer.); and

programming said selectable visual indications corresponding to said selectable key functions (Column 4, lines 1-54 of *Acevedo* disclose that the image displayed on one of the display keys 12 correspond to the function currently enabled for that one of the display keys.).

Regarding claim 38, *Acevedo* discloses a method of operating a multifunctional keyboard according to claim 37 and wherein said selectable key functions are multi-lingual key functions (Column 4, lines 11-14 of *Acevedo* disclose that the display keys 12 are capable of displaying a foreign alphabet.).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Acevedo (US 5,818,361) in view of Dreher (US 4,551,717).

Regarding claim 21, *Acevedo* discloses a multifunctional keyboard according to claim 1.

Acevedo fails to teach wherein at least some of the keys each include a driver chip driving said LED matrix and a connecting cable providing communication between said key and an external device.

Dreher discloses wherein at least some of the keys each include a driver chip driving said LED matrix and a connecting cable providing communication between said key and an external device (Figures 2-3 of *Dreher* disclose having a flexible cable 24 for providing communication between the key and the keyboard driver and a display driver 32 for driving a display circuit 40, which in Column 1, lines 49-51 is disclosed as being an LED display.).

Therefore it would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify the multifunctional keyboard taught by *Acevedo* with the teachings of *Dreher* in order to form a multifunctional keyboard in which damaged keys can easily be swapped out for a replacement key.

Regarding claim 22, *Acevedo* as modified above discloses a multifunctional keyboard according to claim 2 l, wherein said connecting cable is provided with at least 6 conductors including a VDD - chip power voltage conductor; a CLK - clock signal conductor; a DIN input data and control bit connector; an SW- input signal of normally open key contact conductor; a GND - common wire of power, data and second signal contact conductor; and a DO - output data and control bit conductor (Column 3, lines 7-

36 of *Dreher* disclose having a flexible cable 24 supply a power signal POWER (VDD), a clock signal CLOCK (CLK), a data signal DATA (DIN), a ready signal RDY (SW), a ground signal GROUND (GND), and a control bit signal KEYSELECT (DO). Since flexible cable 24 is supplying the above signals, it is inherent that the cable has at least 6 conductors.).

7. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Acevedo (US 5,818,361) in view of Jaeger (US 5,867,149).

Regarding claim 23, a multifunctional keyboard according to claim 1.

Acevedo fails to teach that said LED matrix comprises 7 columns and 11 rows of LEDs.

Jaeger discloses said LED matrix comprises 7 columns and 11 rows of LEDs (Column 6, lines 48-67 and Column 7, lines 1-12 and Figure 6 of *Jaeger* disclose having an LED matrix comprises 20 rows and 20 columns. It would have been obvious to one of ordinary skill in the art at the time at the invention was made that the LED matrix could be made up of any number of rows and columns.).

Therefore it would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify the multifunctional keyboard taught by *Acevedo* with the teachings of *Jaeger* in order to form a multifunctional keyboard in which the display keys have a greater resistance to moisture damage.

8. Claims 24 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Acevedo (US 5,818,361) and Dreher (US 4,551,717) as applied to claim 21-22 above, and further in view of Tsuji (US 2003/0085854).

Regarding claim 24, *Acevedo* as modified above discloses a multifunctional keyboard according to claim 21.

Acevedo as modified above fails to teach wherein said driver chip comprises: an 11-digit shift register adapted to receive input data in serial code; row drivers connected to anodes provided in rows in said LED matrix; control circuit adapted to permit current output from said row drivers; a column driver adapted to select the column of said LED matrix using a 7-digit looped shift register.

Tsuji discloses wherein said driver chip comprises: an 11-digit shift register adapted to receive input data in serial code; row drivers connected to anodes provided in rows in said LED matrix; control circuit adapted to permit current output from said row drivers; a column driver adapted to select the column of said LED matrix using a 7-digit looped shift register (Figure 6 of *Tsuji* discloses a driver chip with a shift register 402 receiving input data, a common driver 42, a control circuit 47 which controls current output from said common driver 42, and a Column driver 44 containing a shift register 401. It would have been obvious to one of ordinary skill in the art at the time that the invention was made to adjust the size of the shift registers based on the size of the display being driven by the driver chip.).

Therefore it would have been obvious to one of ordinary skill in the art at the time that the invention was made to further modify the multifunctional keyboard taught by

Acevedo with the teachings of *Tsuji* in order to form a multifunctional keyboard containing a driver circuit which reduces the amount of data that is stored in buffers and simplifies the driver circuit structure.

Regarding claim 30, *Acevedo* as modified above discloses a multifunctional keyboard according to claim 22, wherein said driver chip comprises:

an 11-digit shift register adapted to receive input data in serial code (Figure 6 of *Tsuji* discloses a shift register 402.);

row drivers connected to anodes provided in rows in said LED matrix (Figure 6 of *Tsuji* discloses a common driver 42.);

control circuit adapted to permit current output from said row drivers (Figure 6 of *Tsuji* discloses a control circuit 47 which controls said common driver 42.);

a column driver adapted to select the column of said LED matrix using a 7-digit looped shift register (Figure 6 of *Tsuji* discloses a shift register 401.).

It would have been obvious to one of ordinary skill in the art at the time that the invention was made to adjust the size of the shift registers based on the size of the display being driven by the driver chip.

9. Claims 25 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Acevedo (US 5,818,361) and Dreher (US 4,551,717) as applied to claims 21-22 above, and further in view of Shimizu (US 6,784,874).

Regarding claim 25, *Acevedo* as modified above discloses a multifunctional keyboard according to claim 21.

Acevedo as modified above fails to teach a multifunctional keyboard also comprising an elastomeric pad having a plurality of sensory contacts, said elastomeric pad being located beneath said plurality of multifunctional keys and being operative to normally retain said plurality of multifunctional keys in an upward position so as to prevent contact with said sensory contacts when the multifunctional key is in said upward position and to allow contact when one of said plurality of multifunctional keys is depressed.

Shimizu discloses a multifunctional keyboard also comprising an elastomeric pad having a plurality of sensory contacts, said elastomeric pad being located beneath said plurality of multifunctional keys and being operative to normally retain said plurality of multifunctional keys in an upward position so as to prevent contact with said sensory contacts when the multifunctional key is in said upward position and to allow contact when one of said plurality of multifunctional keys is depressed (Figure 3 of *Shimizu* discloses an elastic member 18 containing a contact 8, wherein elastic member 18 operates to hold the keys 12 in an upward position until a user applies force to the key which cause said contact 8 to stationary contacts 10 and indicate that a key entry has occurred.).

Therefore it would have been obvious to one of ordinary skill in the art at the time that the invention was made that the push-button switch circuitry taught by *Shimizu*

could be substituted for the switching circuit used in the modified multifunctional keyboard taught by *Acevedo* and *Dreher*.

Regarding claim 31, *Acevedo* as modified above discloses a multifunctional keyboard according to claim 22 and also comprising an elastomeric pad having a plurality of sensory contacts, said elastomeric pad being located beneath said plurality of multifunctional keys and being operative to normally retain said plurality of multifunctional keys in an upward position so as to prevent contact with said sensory contacts when the multifunctional key is in said upward position and to allow contact when one of said plurality of multifunctional keys is depressed (Figure 3 of *Shimizu* discloses an elastic member 18 containing a contact 8, wherein elastic member 18 operates to hold the keys 12 in an upward position until a user applies force to the key which cause said contact 8 to stationary contacts 10 and indicate that a key entry has occurred.).

10. Claims 28-29, 39-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Acevedo (US 5,818,361) in view of Kim (US 2002/0149568).

Regarding claim 28, *Acevedo* discloses a multifunctional keyboard according to claim 1.

Acevedo fails to teach wherein said selectable key functions are user programmable.

Kim discloses wherein said selectable key functions are user programmable (Paragraphs [0009] – [0011] of *Kim* disclose that the user operates a switch to choose between the selectable key functions and can also program the keyboard to contain the languages desired by the user.).

Therefore it would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify the multifunctional keyboard taught by *Acevedo* with the teachings of *Kim* in order to form a multifunctional keyboard in which the user can choose a different language and simultaneously have the characters displayed on the keyboard.

Regarding claim 29, *Acevedo* as modified above discloses a multifunctional keyboard according to claim 1 and wherein said selectable visual indications are free-form programmable (Paragraphs [0009] – [0011] of *Kim* disclose that the user can program the keyboard to contain the languages desired by the user.).

Regarding claim 39, *Acevedo* discloses a method of operating a multifunctional keyboard according to claim 37 and wherein said programming said selectable visual indications is free-form programming (Paragraphs [0009] – [0011] of *Kim* disclose that the user can program the keyboard to contain the languages desired by the user.).

Regarding claim 40, *Acevedo* as modified above discloses a method of operating a multifunctional keyboard according to claim 38 and wherein said programming said selectable visual indications is free-form programming (Paragraphs [0009] – [0011] of *Kim* disclose that the user operates a switch to choose between the

selectable key functions and can also program the keyboard to contain the languages desired by the user.).

11. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Acevedo (US 5,818,361) and Dreher (US 4,551,717) and Tsuji (US 2003/0085854) as applied to claim 30 above, and further in view of Shimizu (US 6,784,874).

Regarding claim 32, *Acevedo* as modified above discloses a multifunctional keyboard according to claim 30.

Acevedo as modified above fails to teach a multifunctional keyboard also comprising an elastomeric pad having a plurality of sensory contacts, said elastomeric pad being located beneath said plurality of multifunctional keys and being operative to normally retain said plurality of multifunctional keys in an upward position so as to prevent contact with said sensory contacts when the multifunctional key is in said upward position and to allow contact when one of said plurality of multifunctional keys is depressed.

a multifunctional keyboard also comprising an elastomeric pad having a plurality of sensory contacts, said elastomeric pad being located beneath said plurality of multifunctional keys and being operative to normally retain said plurality of multifunctional keys in an upward position so as to prevent contact with said sensory contacts when the multifunctional key is in said upward position and to allow contact when one of said plurality of multifunctional keys is depressed (Figure 3 of *Shimizu* discloses an elastic member 18 containing a contact 8, wherein elastic member 18

operates to hold the keys 12 in an upward position until a user applies force to the key which cause said contact 8 to stationary contacts 10 and indicate that a key entry has occurred.).

Therefore it would have been obvious to one of ordinary skill in the art at the time that the invention was made that the push-button switch circuitry taught by *Shimizu* could be substituted for the switching circuit used in the modified multifunctional keyboard taught by *Acevedo*.

12. Claims 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Acevedo (US 5,818,361) and Dreher (US 4,551,717) and Tsuji (US 2003/0085854) as applied to claim 30 above, and further in view of Kim (US 2002/0149568).

Regarding claim 33, *Acevedo* as modified above discloses a multifunctional keyboard according to claim 30.

Acevedo as modified above fails to teach wherein said selectable key functions are user programmable.

Kim discloses wherein said selectable key functions are user programmable (Paragraphs [0009] – [0011] of *Kim* disclose that the user operates a switch to choose between the selectable key functions and can also program the keyboard to contain the languages desired by the user.).

Therefore it would have been obvious to one of ordinary skill in the art at the time that the invention was made to further modify the multifunctional keyboard taught by *Acevedo* with the teachings of *Kim* in order to form a multifunctional keyboard in which

the user can choose a different language and simultaneously have the characters displayed on the keyboard.

Regarding claim 34, *Acevedo* as modified above discloses a multifunctional keyboard according to claim 30 and wherein said selectable visual indications are free-form programmable (Paragraphs [0009] – [0011] of *Kim* disclose that the user can program the keyboard to contain the languages desired by the user.).

13. Claims 35-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Acevedo (US 5,818,361) and Dreher (US 4,551,717) and Tsuji (US 2003/0085854) as applied to claim 32 above, and further in view of Kim (US 2002/0149568).

Regarding claim 35, *Acevedo* as modified above discloses a multifunctional keyboard according to claim 32.

Acevedo as modified above fails to teach wherein said selectable key functions are user programmable.

Kim discloses wherein said selectable key functions are user programmable (Paragraphs [0009] – [0011] of *Kim* disclose that the user operates a switch to choose between the selectable key functions and can also program the keyboard to contain the languages desired by the user.).

Therefore it would have been obvious to one of ordinary skill in the art at the time that the invention was made to further modify the multifunctional keyboard taught by *Acevedo* with the teachings of *Kim* in order to form a multifunctional keyboard in which

the user can choose a different language and simultaneously have the characters displayed on the keyboard.

Regarding claim 36, *Acevedo* as modified above discloses a multifunctional keyboard according to claim 32 and wherein said selectable visual indications are free-form programmable (Paragraphs [0009] – [0011] of *Kim* disclose that the user can program the keyboard to contain the languages desired by the user.).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to STEPHEN A. BRAY whose telephone number is (571)270-7124. The examiner can normally be reached on Monday - Friday, 9:00 a.m. - 5:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, AMR AWAD can be reached on (571)272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/STEPHEN A BRAY/
Examiner, Art Unit 2629

/Amr Awad/
Supervisory Patent Examiner, Art Unit 2629

13 March 2010